CURRENT MODE PWM CONTROLLER

DESCRIPTION

GGDH6802 is current mode PWM controller with built-in high-voltage MOSFET used for SMPS.

GGDH6802 has a built-in high-voltage start-up constant current source and the charge current is large.

GGDH6802 enters burst mode to reduce the standby power dissipation in light load. The switch frequency is 60KHz with jitter frequency for low EMI.

GGDH6802 integrates various protections such as under voltage lockout, lead edge blanking, over voltage protection, over current protection and over temperature protection. The circuit will restart until normal if protection occurs.

FEATURES

* Built-in high voltage start-up constant current source
* Frequency jitter for low EMI
* Wide supply voltage range: 9V ~ 38V
* Burst mode with light load
* Current control mode
* Over voltage protection and under voltage lockout
* Over current protection
* Over temperature protection

APPLICATIONS

* Off-line SMPS
* Non-isolated buck-boost converter
* Small home appliances

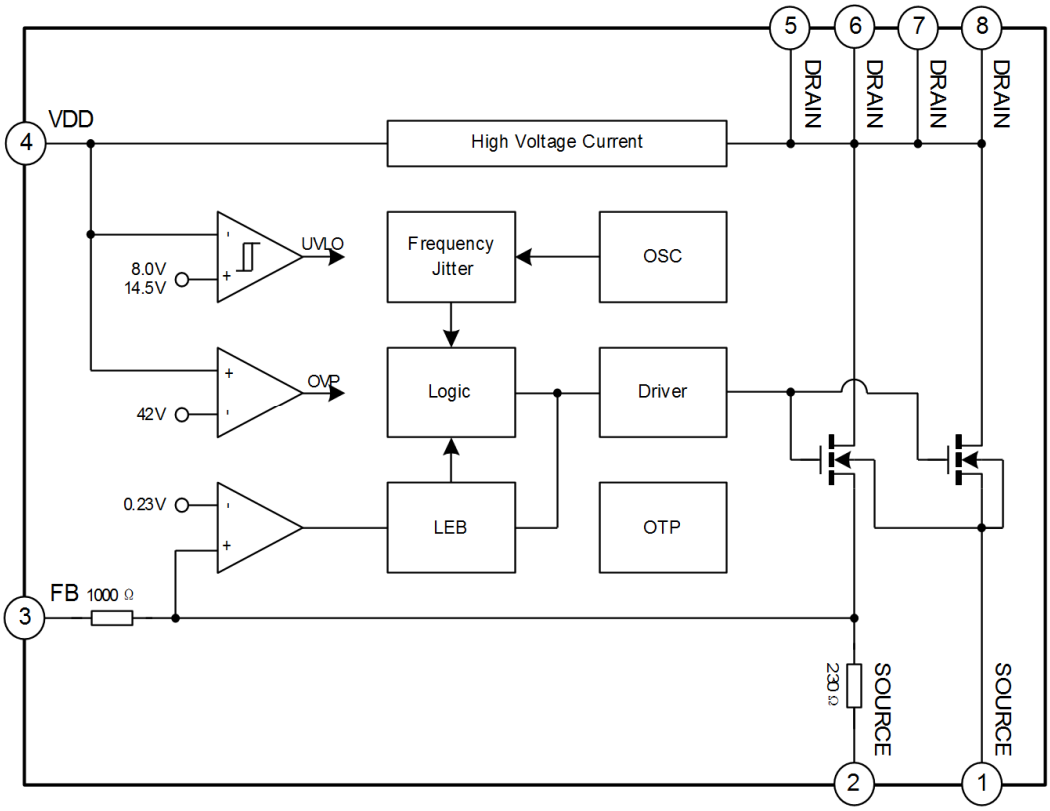
ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
GGDH6802	DIP-8-300-2.54	GGDH6802	Pb free	Tube

TYPICAL OUPUT POWER CAPABILITY

Part No.	195~265V		85~265V	
	Adapter	Open	Adapter	Open
GGDH6802	10W	13W	5W	8W

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Characteristics	Symbol	Ratings	Unit
Drain Gate Voltage (RGS=1MΩ)	V_{DGR}	650	V
Gate-Source (GND) Voltage	V_{GS}	±30	V
Drain Current Pulse *	I_{DM}	6	A
Continuous Drain Current (Tamb=25°C)	I_D	1	A
Signal Pulse Avalanche Energy **	EAS	30	mJ
High Voltage Input	$V_{HV,MAX}$	650	V
Power Supply Voltage	$V_{CC,MAX}$	50	V
Feedback current	I_{FB}	3	mA
Power Dissipation	P_D	6.3	W
Thermal Resistance Junction-Ambient	θ_{ja}	70	°C/W
Thermal Resistance Junction-case	θ_{jc}	20	°C/W
Operating Junction Temperature	T_J	+150	°C
Operating Temperature Range	T_{amb}	-20~+85	°C
Storage Temperature Range	T_{STG}	-55~+150	°C

Note: 1. Pulse width is limited by maximum junction temperature;

2. L=51mH, T_J=25°C(start).

ELECTRICAL CHARACTERISTICS(For MOSFET, unless otherwise specified, T_{amb} =25°C)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=50μA	650	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	--	--	50	μA
		V_{DS}=480V, V_{GS}=0V, T_{amb}=125°C	--	--	200	μA
Static Drain-Source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.5A	--	8.4	--	Ω
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	155	--	pF
Output Capacitance	C_{OSS}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	23	--	pF
Reverse Transfer Capacitance	C_{RSS}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	0.6	--	pF
Turn On Delay Time	$T_{D(ON)}$	V_{DD}=0.5BV_{DSS}, I_D=25mA	--	6	--	ns
Rise Time	T_R	V_{DD}=0.5BV_{DSS}, I_D=25mA	--	13	--	ns
Turn Off Delay Time	$T_{D(OFF)}$	V_{DD}=0.5BV_{DSS}, I_D=25mA	--	9	--	ns
Fall Time	T_F	V_{DD}=0.5BV_{DSS}, I_D=25mA	--	17	--	ns

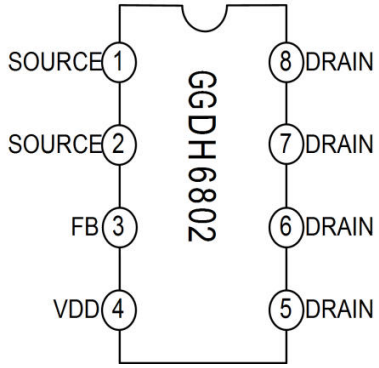
ote： The OL debounce Time and Soft start time is proportional to the period of switching cycle. So that, the lower RT value will bring the higher switching frequency, shorter the OL debounce Time and shorter Soft start

ELECTRICAL CHARACTERISTICS(Unless otherwise stated, V_{CC}=18V； T_{amb}=25°C)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
High voltage start-up section						
Charge current	I_{HVC}	V_{CC}=0V, V_{HV}=100V	0.5	1.0	1.2	mA
Shutdown leakage current	I_{HVS}	V_{CC}=18V	--	3	20	μA
Supply section						
Operating voltage range	V_{DD}	After start-up	9V	--	38V	V
Operating current 0	I_{DD0}	I_{FB} = 2mA; not switching	--	0.55	--	mA
Operating current 1	I_{DD1}	I_{FB} = 0.5mA; I_D = 50mA	--	1.00	--	mA
Shutdown threshold	V_{DDOFF}		7	8	9	V
Start-up threshold	V_{DDON}		13	14.5	16	V
Threshold hysteresis	V_{DDHYS}		5.8	6.5	7.2	V
Over voltage threshold	V_{DDOVP}		38	42	46	V
PWM comparator section						
I_{FB} to I_D current gain	G_{ID}		--	320	--	
Peak current limitation	I_{DLIM}	V_{FB} = 0V	0.32	0.4	0.48	A
I_{FB} shutdown current	I_{FBSD}		--	0.9	--	mA
FB Pin input impedance	R_{FB}	I_D = 0mA	--	1.2	--	kΩ
Current sense delay to turn-off	t_d	I_D = 0.2A	--	200	--	ns
lead edge blanking,	t_{LEB}		--	500	--	ns
Minimum turn-on time	T_{ONMIN}		--	700	--	ns

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Over temperature protection section						
Thermal shutdown temperature	T_{SD}		--	155	--	°C
Thermal shutdown hysteresis	T_{HYS}		--	40	--	°C

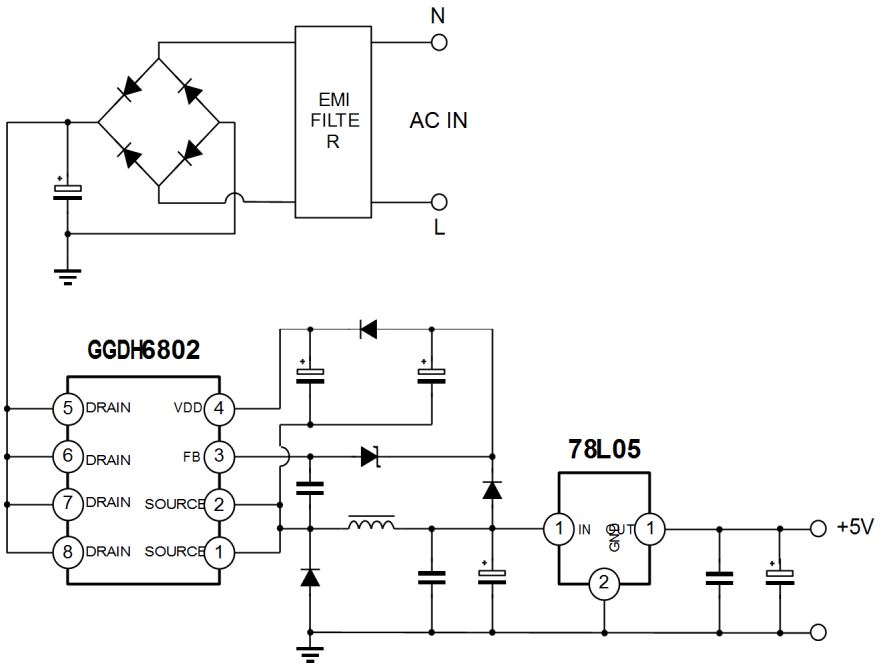
PIN CONFIGURATION



PIN DESCRIPTION

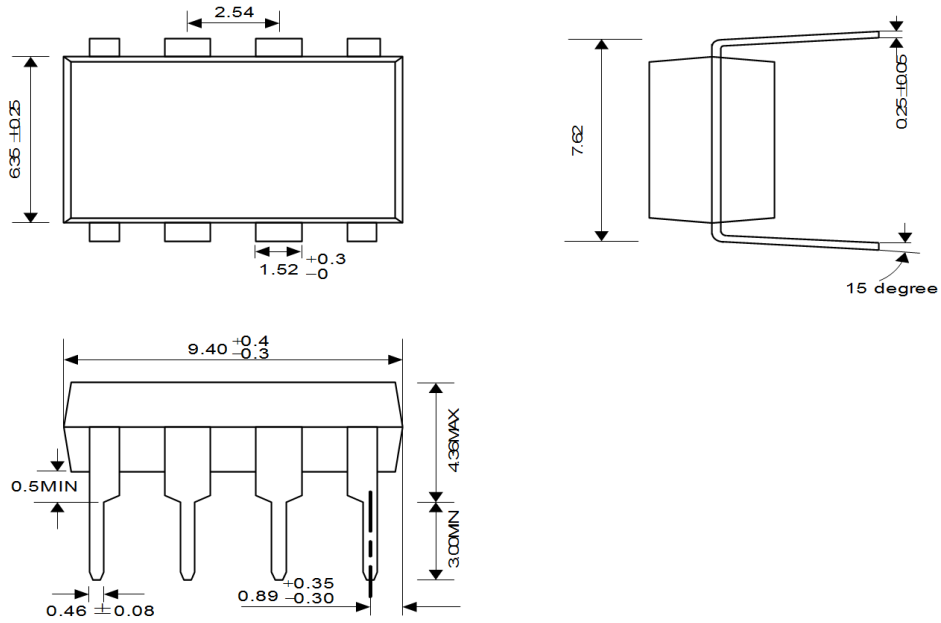
Pin No.	Pin Name	I/O	Description
1, 2	SOURCE	I/O	Power MOSFET source and circuit ground reference.
3	FB	I	Feedback input. The useful voltage range extends from 0V to 1V, and defines the peak drain MOSFET current. The current limitation, which corresponds to the maximum drain current, is obtained for a FB pin shorted to the SOURCE pin.
4	VDD	I/O	Power supply of the control circuits.
5, 6, 7, 8	DRAIN	I/O	Power MOSFET drain. Also used by the internal high voltage current source during start up phase for charging the external VDD capacitor

TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

DIP-8-300-2.54 **UNIT: mm**



MOS DEVICES OPERATING NOTES:

Electrostatic charges may exist in many things. Please take the following preventive measures to prevent damage to the MOS electric circuit caused by discharge:

- The operator must put on wrist strap which should be earthed to against electrostatic discharge.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed in antistatic/conductive containers for transportation.

Disclaimer :

- **GGIC reserves the right to make changes to the information herein for the improvement of the design and performance without further notice! Customers should obtain the latest relevant information before placing orders and should verify that such information is complete and current.**
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- **GGIC will supply the best possible product for customers!**